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Francis G. Caro

University of Massachusetts Boston, frank.caro@umb.edu

Eilon Caspi

University of Massachusetts Boston

Jeffery Burr

University of Massachusetts Boston, jeffrey.burr@umb.edu

Jan Mutchler

University of Massachusetts Boston, jan.mutchler@umb.edu

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Active Aging: Motives and Barriers

Francis G. Caro

Eilon Caspi

Jeffrey Burr

Jan Mutchler

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Gerontology Institute
University of Massachusetts Boston

INTRODUCTION

Both the successful aging and productive aging literatures attach great importance to activity. In the successful aging paradigm, activity contributes positively to both physical health and psychological well being. In the productive aging paradigm, older people make contributions to society through certain types of activities, notably gainful employment, community service volunteering, informal assistance usually within their families, and political participation.

Much of the research on activities among older people has focused on specific forms of activity. The literature on employment among older people, for example, is relatively well developed with attention to such topics as the extent to which older people work, employment motivation among older people, employment opportunities for older people, age discrimination in hiring, patterns of full-time and part-time employment, access to employment training, bridge jobs for those approaching retirement, and reemployment after retirement (See, for example, Crown, 1996).

Similarly, the literature on volunteering among older people is well developed with attention to such topics as the extent of volunteering among older people, motivation for volunteering, volunteer opportunities, and implications of volunteering for health (Baker et al. 2005; Fischer & Schaffer, 1993; Li & Ferraro, 2005).

The long-term care literature has documented the enormous contributions of spouses and adult children as unpaid caregivers of older people with long-term care needs (Stone, 2000; Morris, Caro, & Hansan, 1998). The premise in the long-term care literature is that informal caregiving is usually an obligation that is triggered by need in a family member. The literature has emphasized the extent to which family members participate even when such participation has adverse affects for their own physical and mental health.

A number of studies have been conducted concerning the circumstances in which older people enroll in educational programs. Notable among these are books by Lowy and O'Connor (1986) and Lamdin and Fugate (1997). The latter describe a number of formal and informal educational programs for elders. They also report on findings of a survey administered to elder learners that included questions on reasons for learning.

Less attention has been given to the relationships among various forms of productive activity (Caro and Bass, 1995; Morrow-Howell, Hinterlong, & Sherraden, 2001; Mutchler, Burr, & Caro, 2003). Various forms of activity may be complementary or competitive. In other words,

participation in one form of productive activity may open doors to other forms of productive activity. On the other hand, under some circumstances participation in one form of activity because of its time demands may tend to crowd out participation in other activities. From the healthy aging perspective, questions can be asked about the implications of type of activity for well being. Does one form of activity readily substitute for another? In other words, do all kinds of activity contribute equally to well being? Does variety in activity matter? In other words, do elders maximize their well being when they engage in a variety of forms of activity?

Some work has been done on the number of forms of activity in which older people are engaged. In the Commonwealth Fund Productive Aging Study, a national survey that considered employment, volunteering, informal long-term care, and help to children and grandchildren, Caro and Bass (1995), for example, documented the fact that many elders were involved in multiple forms of these activities. The data set allowed them to examine the implications of demographic characteristics for number of productive activities. On the other hand, the data set did not enable them to examine the implications of number of activities for well being.

Burr, Mutchler, & Caro (2005) employed latent class analysis to show that both intensity of commitment to activity and specific types of activity cluster together in unique patterns that are in turn related to health outcomes. Other research exploring the interrelationship among various forms of activity has found only weak bivariate relationships among work, volunteering, informal long-term care, and help to grandchildren. Nevertheless, some researchers have found evidence of subtle interconnections. Mutchler, Burr, & Caro (2003), for example, have examined the extent to which employment among older people may influence volunteering. A number of studies have shown that retirement does not have a positive effect on the likelihood of volunteering among older people; however, among older people who volunteer, their effort as volunteers tends to increase in the period immediately after retirement. Mutchler, Burr, and Caro (2003) hypothesize that volunteer opportunities are sometimes associated with employment. When the tie to an employer is severed, the connection to a certain set of volunteer opportunities tends also to be lost or diminished. For some, retirement means more time that could be devoted to volunteer activity but a disconnection from some of the venues through which volunteer work can be done. Burr, Choi, Mutchler, & Caro (2005) have examined the relationship between informal caregiving and volunteering, finding that under some circumstances, caregivers are more likely to report more hours of volunteering than non-caregivers.

The current research builds upon previous pilot research (Caro, Bruner-Canhoto, Burr, & Mutchler, 2005) which explored the question whether activity on the part of older people can be explained, in part, by a general motivation to be active that cuts across various forms of activity. One premise is that motivation defined as “personal interest or desire” is one of a number of forces that contributes to participation in an activity. A further premise is that a distinction may be made between motivation that is specific to a particular activity and general motivation to be active. A general motive to be active may help to explain specific forms of activity. Further, a general motive to be active may also help to explain the number of forms of activity in which people engage.

The study sidestepped the question whether it is useful to distinguish between general motivation to be active and motivation for *productive* activity. Gerontologists classify certain forms of activity because they are judged to be socially valuable. Paid employment and formal volunteering are widely recognized as *productive* activities. In the case of employment, monetary payment for work is the recognition of valued effort. In the case of formal volunteering, some form of nonmonetary recognition is provided to demonstrate that the effort is appreciated. In other cases, the classification of an activity as productive is more complex because public recognition of value is less obvious. The research simply focused on the extent to which older people desire to be active, whether they or others classify the activity to be productive in ways in which economists or sociologists might classify the activity.

The study developed a measure of motivation for active aging. In addition, measures of motivation to work and to volunteer were adapted from existing instruments. Further, a new measure of motivation to help within the family was developed. Analysis of survey data for an opportunity sample of elders in Massachusetts provided promising evidence that general activity motivation is related to but different from motivation for the specific forms of activity studied. Further, the data suggested that general activity motivation helps to explain the number of types of volunteer work done by elders beyond the effects of motivation to volunteer.

The current pilot study builds on the previous pilot by expanding the agenda to include barriers to activities. Further, it expands the agenda to include taking classes and exercise as activities. In this study, assisting within the family was dropped since the previous pilot indicated that informal long-term care and caring for grandchildren were largely driven by obligation. In part, the aim of the current study was to refine the existing measures of motivation to be active, to volunteer, and to work. A further aim was to adapt existing measures of motivation to enroll in classes and to engage

in physical exercise. In addition, the project sought to develop or adapt measures of barriers to general activity, work, volunteering, taking classes, and exercising. A further aim was to use data from an opportunity sample to explore relationships among motivation, barriers, and activities.

METHODS.

The item pools for measures of motivation to exercise were drawn from Sechrist, Walker, & Pender (1987). The items from the measure of motivation to take classes were adapted from instruments used by Scala (1996); Lamdin & Fugate (1997); and Morrow-Howell, Kinnevy, & Mann (1999). The items for the barrier measures were adapted from a variety of sources, notably Sechrist, Walker, & Pender (1987) and the Commonwealth Productive Aging Study (Bass, 1995).

The questionnaire included measures of motivation and perceived barriers for activity in general and four specific activities: work, exercise, volunteering, and taking classes. In addition, we included questions about current paid employment, formal volunteering, taking classes, physical exercise, and standard sociodemographic variables.

The questionnaire was administered to an opportunity sample of community-residing elders in eastern Massachusetts in 2004. Some of the questionnaires were administered in classes for elders at UMass Boston. Some were administered to volunteers active in the Gerontology Institute at the University of Massachusetts Boston. Other questionnaires were completed by elders attending senior centers in the area. An internet version of the questionnaire was also posted on the Gerontology Institute web site. A total of 192 usable questionnaires were completed, including 30 that were completed on line.

Response to the internet survey component was disappointing. In spite of a conspicuous location on the web site and promotion through e-mail and leaflets, the numbers of on-line respondents were insufficient. Consequently, we had to rely largely upon paper questionnaires that were distributed in classes and at sites where elders congregate.

RESPONDENT CHARACTERISTICS.

Respondent characteristics are summarized in Table 1. The average age of respondents was 71. Approximately three quarters were women, and slightly over one-third were married. The sample is relatively well educated with two thirds reporting some education beyond high school. Respondents were overwhelmingly white (93%), reflecting the racial characteristics of elders in Massachusetts.

Slightly over one half of the respondents reported that they were in excellent or very good health. Slightly over one third reported a physical limitation such as walking, climbing, reaching, lifting, or carrying. Nearly three quarters owned a car. Approximately a third reported being religious to a large extent and nearly a quarter rated themselves as very active in church.

Respondent activities are reported in Table 2. Thirty percent were employed either full-time or part-time. Over half (58%) were current volunteers, and another 7% had volunteered within the past year. (The percent who are volunteering is substantially higher than is the case for elders generally.) Almost two-thirds (63%) reported exercising on a regular basis. (Exercising was defined for respondents as “regular exercise activity consisting of at least 20 minutes of continuous exercise two or three times per week for at least three months.) Over half had been enrolled in a class that had met at least five times in the past year. The relatively high proportion who had taken classes is not surprising in light of the fact that many respondents were recruited through classes. The sample is also notable for the high proportion of respondents who were active as volunteers.

Table 1. Respondent Characteristics (n=192)

Age	70.8 (mean) (8.0) (standard deviation)
Female	76.0%
Married	36.8%
Education beyond high school	67.7%
White	92.6%
Excellent or very good health	52.6%
Physical activity limitation	36.5%
Owns car	72.4%
Religious (to a large extent)	33.7%
Active in church (very)	23.3%

Table 2. Respondent Activities (n=192)

Employed (full or part-time)	30.3 %
Formal volunteering (current)	57.8%
Exercising	62.8%
Took classes (within past year)	53.0%

General Activity Motivation

From a pool of 13 items, we included nine items in our measure of general activity motivation. The measure consists of the following items that respondents were asked to rate from 1 = “Not important” to 5 = “Very important.”

The items were preceded by the following question: “How important is it for you to....?” The items are listed in Table 3 with mean scores, standard deviations and correlation coefficients of the items, and the total score:

Table 3. General Activity Motivation (n=192)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
Put your skills to use on a regular basis	4.2	1.1	0.57
Keep a flexible schedule	4.0	1.0	0.60
Make new friends	4.1	1.0	0.60
Do things at your own pace	4.3	0.8	0.50
Have interesting new experiences	4.3	0.9	0.60
Get out of the house regularly	4.5	0.8	0.60
Choose the people with whom you associate	4.2	1.0	0.58
Feel that you have accomplished something every day	4.1	1.0	0.72
Find ways to save money	3.8	1.2	0.60
Total	4.2	0.5	
Alpha = .77			

Although responses tended to be heavily loaded in a positive direction, all of the items yielded a standard deviation of at least .8. The item attracting the greatest “Very important” response was “Get out of the house regularly,” with 65% of respondents reporting “Very important.” For the nine-item scale, the scale reliability coefficient was 0.77. Removal of any of the items did not improve the alpha value. According to the criteria suggested by DeVellis (1991), the scale is highly reliable for research purposes.

General Activity Barriers

From a nine-item pool, we obtained a five-item measure of general barriers to activity. The items were preceded by the following question: To what extent do the following describe your situation? Respondents were given five choices ranging from 1 = “Not at all” to 5 = “Great Extent.”

The items are shown in Table 4 with means, standard deviations, reliability and item-total correlation. For the five-item scale, the scale reliability coefficient was .82. Removal of any of the items did not improve the alpha value.

Table 4. General Activity Barriers (n=188)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
I spend a lot of time dealing with my health care needs	2.9	1.2	.69
I do not like to go out when it is raining	2.3	1.4	.69
I have difficulty walking more than short distances	2.4	1.6	.87
I have major problems with transportation	1.8	1.4	.73
Frequently, I have very little energy	2.4	1.3	.81
Total	2.4	1.0	
Alpha = .82			

All of the items had a standard deviation greater than 1. Except for item one, respondents tended to minimize the extent of the barrier. In the case of item one, the pattern was remarkably balanced between high and low barrier ratings. For the five-item scale, the scale reliability coefficient was .82. Removal of any of the items did not improve the alpha value.

Exercise Motivation

From a seven-item pool, we created a four-item measure of motivation to exercise. We used the following lead question: “To what extent do the following describe your situation?” Respondents were given five response options ranging from 1 = “not at all” to 5 = “to a great extent.” The following items were included in the measure:

Table 5. Exercise Motivation (n=183)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
Exercise helps me relax	4.1	1.1	0.90
Exercise increases my level of physical fitness	4.3	1.0	0.87
Exercise helps me to sleep better at night	4.0	1.1	0.87
I enjoy exercising	3.8	1.3	0.86
Total	4.1	1.0	
Alpha = .90			

All of the items had standard deviations equal to or greater than 1. In each case, responses tended to be positive. The scale reliability score for the four-item scale was .90.

Exercise Barriers

We used all six items in our pool concerned with barriers to exercise. We used the following lead question: “To what extent does each of the following items affect your decision to exercise?” Respondents were asked to choose among five response options ranging from 1 = “Not at all” to 5 = “Large extent.” The following items were included:

Table 6. Exercise Barriers (n=177)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
I do not have time to exercise	2.3	1.3	.74
I feel embarrassed when other people see me exercising	1.8	1.1	.79
Exercise clothing and equipment cost too much money	2.1	1.4	.71
Regular exercise gets boring	2.5	1.4	.75
I get very tired when I exercise	2.3	1.3	.74
I am concerned about injuring myself when I exercise	1.9	1.2	.69
Total	2.1	1.0	
Alpha = .83			

On all items, respondents tended to minimize the barriers. (The item means ranged from 1.8 to 2.5). However, all items had a standard deviation greater than 1. The scale reliability score for the five-item scale was .83.

Educational Motivation

Our measurement of educational motivation began with 11 items. We used the following lead question for this section: “How important are the following reasons for you to enroll in a class (on a

subject of your choice)?” Five response options were provided ranging from 1 = “Not important” to 5 = “Very important.” With the assistance of factor analysis, we created two scales that we labeled “instrumental motivation” and “expressive motivation.” As noted above, the distinction between expressive and instrumental motives for older adult education was made previously by Lowy & O’Connor (1986). The five-item instrumental education motivation consisted of the following:

Table 7. Educational Motivation – Instrumental (n=166)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
To help me with my current job or help in getting a new job	2.0	1.4	0.69
To help me to be more effective as a volunteer	2.6	1.5	0.73
To help me pursue a new or long standing interest or hobby	3.4	1.4	0.69
To help me manage my personal affairs	2.9	1.4	0.75
To enable me to complete my education	2.2	1.4	0.71
Total	2.6	1.1	
Alpha = .77			

With one exception, the respondents tended to rate each option in the direction of “very important.” However, respondents tended to rate “help me manage my personal affairs” as less important. The means ranged from 2.0 to 3.4. All of the items had standard deviations greater than 1. The scale reliability coefficient was .77.

Educational Motivation - Expressive

The four-item expressive education motivation consisted of the following:

Table 8. Educational Motivation – Expressive (n=175)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
The joy of learning	4.3	1.0	0.81
To meet people with interests similar to mine	4.0	1.1	0.83
Assist me in searching for meaning and wisdom in my life	3.6	1.3	0.81
To keep my mind fresh	4.2	1.2	0.82
Total	4.0	1.2	0.82
Alpha = .84			

The first two items tended to receive “very important” ratings. The final two items elicited highly varied responses. The mean ratings ranged from 3.6 to 4.3. All of the items had a standard deviation greater than 1. The scale reliability coefficient was .84.

Educational Barriers

Our measurement of educational barriers began with a pool of six items.

We used the following lead question: “To what extent are each of the following items obstacles to your enrolling in classes?” Respondents were given five response options ranging from 1= “not at all” to 5 = “to a great extent.” The following items were included:

Table 9. Educational Barriers (n=175)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
I am not aware of classes that interest me	2.0	1.3	0.75
It is hard for me to find a learning program that fits my schedule	2.2	1.4	0.76
The tuition and fees cost too much	2.7	1.6	0.78
I have hearing problems that make participation difficult	1.7	1.3	0.76
I have vision problems that make participation difficult	1.6	1.2	0.73
Total	2.1	1.0	
Alpha = .81			

Item means ranged from 1.6 to 2.7. All of the items had standard deviations greater than 1. For the five-item scale, the scale reliability coefficient was 0.81.

Volunteer Motivation

We used all eight items in our pool concerned with motivation to volunteer. We used the following lead question: “To what extent do you agree with the following statements?” Respondents were asked to choose among five response options ranging from 1 = “Not at all” to 5 = “Large extent.” The following items were included:

Table 10. Volunteer Motivation (n=175)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
Volunteering can enable me to do something for a cause that is important to me	4.1	1.2	0.80
Volunteering can be a way to give back	4.2	1.1	0.84
I enjoy the assignments that I can do as a volunteer	4.0	1.1	0.90

The volunteer assignments that are available to me are interesting	3.9	1.2	0.85
I am especially willing to volunteer when I can use my skills, talent, and experience.	4.2	1.1	0.82
Volunteering can be a good way to get valuable experience.	3.9	1.3	0.83
My religious beliefs encourage me to volunteer	3.3	1.5	0.65
Volunteering enables me to do things with friends	3.6	1.3	0.75
Total	3.9	1.0	

Alpha = .92

Item means ranged from 3.3 to 4.2. All of the item standard deviations were greater than 1. For the 8-item scale, the scale reliability coefficient was 0.92.

Volunteer Barriers

Our measurement of volunteer barriers began with a pool of seven items. We used the following lead question: “To what extent does each of the following limit your volunteering?” Respondents were given five response options ranging from 1 = “not at all” to 5 = “to a great extent.” The following items were included:

Table 11. Volunteer Barriers (n=179)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
Lack of information on how to become involved as a volunteer	2.0	1.3	0.81
My inability to make a year-round commitment as a volunteer	2.8	1.6	0.73
Lack of skills needed to be an effective volunteer	2.3	1.5	0.76
Lack of causes that I care to support as a volunteer	2.2	1.3	0.81
I believe that I should be paid for my efforts	1.9	1.2	0.68
I cannot afford the out-of-pocket costs of volunteering	2.2	1.4	0.74
Total	2.3	1.0	

Alpha = .85

The item means ranged from 1.9 to 2.8. All of the standard deviations were greater than 1. For the six-item scale, the scale reliability coefficient was 0.85.

Work Motivation

We used all five items in our pool concerned with motivation to work. We used the following lead question: To what extent do you agree with the following? Respondents were given five response options ranging from 1 = “not at all” to 5 = “to a great extent.” The following items were included:

Table 12. Work Motivation (n=155)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
I enjoy working	4.0	1.2	0.62
I want to work because I need the money	2.8	1.5	0.86
I want to work because I need health insurance coverage	2.2	1.5	0.77
Working enables me to save more for retirement	2.8	1.5	0.82
Working gives me self respect	3.6	1.4	0.70
Total	3.1	1.2	
Alpha = .81			

Item means varied from 2.2 to 4.0. All of the standard deviations were greater than 1. For the five-item scale, the scale reliability coefficient was 0.81.

Work Barriers

Our measurement of barriers to work began with a pool of seven items. We used the following lead question: “To what extent do you agree with the following?” Respondents were given five response options ranging from 1 = “not at all” to 5 = “to a great extent.” The following items were included:

Table 13. Work Barriers (n=144)

<i>Item wording</i>	Mean	Standard deviation	Item-total correlation
My skills are not in demand in the labor market	2.2	1.6	0.78
I do not like to get orders from a work supervisor	2.3	1.4	0.70
I have difficulty in finding a job that makes good use of my skills	2.4	1.6	0.85
The jobs that I can get do not pay enough to be worth my while	2.3	1.6	0.82

I don't have enough information about job opportunities	2.3	1.6	0.83
Total	2.3	1.0	
Alpha = .86			

The item means varied only slightly from 2.2 to 2.4. All of the item standard deviations were greater than 1. For the five-item scale, the scale reliability coefficient was 0.86.

Motivation, Barriers, and Activities

We employed the measures of motivation and barriers to explore their contributions to the explanation of activities. Our overall hypothesis is that motivation contributes positively to activity, and barriers reduce the likelihood of activity. In this pilot study we limited ourselves to dichotomous variables of activity. We concerned ourselves only with whether or not respondents were gainfully employed, were active as volunteers, enrolled in classes, and/or engaged in regular exercise. We did not address intensity (time commitment) of specific forms activity. However, we did construct a measure of number of forms of activity as a rough indicator of scope of activity.

Our primary analytic strategy was to use multivariate analysis to determine whether motivation and barriers were associated with activities controlling for the influence of sociodemographic variables, current health and disability status, and automobile ownership. Our analytic approach was to begin with regressions on activities that included only sociodemographic variables, health/disability, and automobile ownership. We then ran the regressions again including the motivation and barrier variables. We examined each of the four activities separately considering motivations and barriers specific to each activity as well as general motivation and barriers. We were not able to examine the effects of motivation and barriers across activities because of excessive numbers of missing values. Although respondents were asked to answer all activity and barrier questions regardless of their involvement with particular activities, many respondents skipped questions in areas in which they were inactive. Finally, we examined the effects of background variables and all of the motivation and barrier measures on the number of productive activities.

Consistent with previous research, we found some relationships between background characteristics and participation in the various activities (Table 14). Men with higher levels of education and in better health were more likely to exercise. Women were more likely than men to take classes. Women who were married and with higher levels of religiosity were more likely to

volunteer. Younger respondents were more likely to be employed. The models accounted for between 10% and 17% of the variance.

Table 14. Sociodemographic Characteristics and Health as Predictors of Activities (Logistic Regressions)				
Activities	Exercise	Take classes	Volunteer	Work
Independent Variables				
Age		*		**** (-)
Gender (Male)	**	** (-)	** (-)	
Education	**	*		
Marital status (Married)			**	
Religiosity			***	* (-)
Health	**			
Activity limitation				
Own car		*		
Pseudo R²	0.10	0.10	0.13	0.16
N	166	161	166	164

* p < 0.10

** p < 0.05

*** p < 0.01

**** p < 0.001

¹Inverse relationships indicated by (-)

The addition of motivation and barrier measures substantially increased the variance explained and changed the influence of some of the background variables (Table 15). The variance explained by the models ranged from 14% to 49%. In the case of exercise, motivation and barriers were linked to exercise in the expected directions. Males remained more likely to exercise but education and self-reported health were no longer associated with exercise. In this model, unmarried respondents were more likely than married respondents to exercise. The model examining predictors of taking classes was the weakest of the four models explaining only 15% of the variance. Expressive educational motivation was positively associated with taking classes; instrumental educational motivation was not associated with taking classes. Educational barriers did not predict taking classes. Surprisingly, general activity motivation was negatively associated with taking classes. None of the background characteristics was associated with taking classes.

Table 15. Motivation, Barriers, and Background Variables as Predictors of Activities (Logistic Regressions)				
Activity	Exercise	Taking classes	Volunteer	Work
Independent Variables				
Age				
Gender (Male)	***			
Education				
Marital status (Married)	** (-)		***	
Religiosity				** (-)
Health				
Activity limitation				
Own car				
Exercise motivation	****	--	--	--
Exercise Barriers (General)	**** (-)	--	--	--
Educational Motivation – Instrumental	--		--	--
Educational Motivation – Expressive	--	**	--	--
Educational Barriers	--		--	--
Volunteer Motivation	--	--	****	--
Volunteer Barriers	--	--	** (-)	--
Work Motivation	--	--	--	****
Work Barriers	--	--	--	**** (-)
General Activity Motivation		* (-)	**	
General Activity Barriers				
Pseudo R²	0.49	0.14	0.36	0.42
N	144	133	144	118

* p < 0.10

** p < 0.05

*** p < 0.01

**** p < 0.001

¹Inverse relationships indicated by (-)

Both volunteer motivation and general activity motivation were positively associated with volunteering. Volunteer barriers were negatively associated with volunteering at the 10% level. Of

the background variables, only marital status was associated with volunteering. (Married respondents were more likely to volunteer than those who were unmarried.)

Both work motivations and work barriers were associated with paid employment in the expected directions. Neither general activity motivation nor general barriers were associated with paid employment. In this model, the relationship between age and employment disappeared. Of the background variables, only religiosity was significant with the more religious respondents being less likely to be employed.

Predictors of Motivation and Barriers. Because the inclusion of motivation and barriers in the multiple regression models often suppressed the influence of background variables, we ran a set of ordinary least squares regression models in which we examined the influence of background variables on specific motivations and a set of regressions examining the influence of background variables on specific barriers. We found evidence of relationships between background variables and specific activity motivation (Table 16). Those who reported better health tended, for example, to have greater motivation to exercise. Instrumental education motivation was inversely associated with age; expressive education motivation was positively associated with education. Volunteer motivation was positively associated with both religiosity and gender. (Women reported greater volunteer motivation than men.) Work motivation was higher among those who were younger, unmarried, and without activity limitations. General activity motivation was higher among those with greater religiosity.

Table 16. Sociodemographic Characteristics and Health as Predictors of Specific and General Motivations (Logistic Regressions)						
Motivations	Exercise	Instrumental education	Expressive education	Volunteer	Work	General activity
Independent Variables						
Age		** (-)			**** (-)	
Gender (Male)				* (-)		
Education			**			
Married					* (-)	
Religiosity		*	*	****		**
Health	***		*			
Activity limitation					* (-)	
Own car		*				
Adjusted R²	0.08	0.05	0.08	0.15	0.29	0.05
N	154	144	150	154	133	163

- * p < 0.10
- ** p < 0.05
- *** p < 0.01
- **** p < 0.001

¹Inverse relationships indicated by (-)

The background characteristics were more strongly related to the barrier measures than they were to the motivation measures. The regression models accounted for a high of 52% of the variance in the case of general activity barriers to a low of 16% in the case of exercise barriers. Some of the background characteristics were consistently associated with the barrier measures. Age was

associated with all of the activity barriers (Table 17) but in a complex way. As expected, older respondents reported greater general activity barriers. However, older respondents reported **lower** barriers for each of the four specific activities. In the case of paid employment, age was inversely associated with working. The unexpected relationship between age and work barriers may be explained by the fact that respondents who were not working often did not answer the barrier and motivation questions. In the case of other specific activities, perhaps there is a tendency for people to react to age with an increasing insistence that potential barriers do not interfere with their participation in activities.

Those with higher levels of education, who were in better health, and who owned automobiles tended to report fewer barriers to specific activities and activities generally. In addition, men tended to report more barriers to taking classes and to working. Married respondents tended to report lower barriers to taking classes and paid employment. Those with activity limitations tended to report greater barriers to general activity.

Table 17. Sociodemographic Characteristics and Health as Predictors of Specific and General Barriers (Logistic Regressions)					
Barriers	Exercise	Taking classes	Volunteer	Work	General activity
Independent Variables					
Age	** (-)	** (-)	**** (-)	*** (-)	***
Gender (Male)		*		**	
Education	** (-)	** (-)		*	*** (-)
Married		* (-)		* (-)	
Religiosity					
Health	** (-)		* (-)	* (-)	*** (-)
Activity limitations					****
Own car		**** (-)	*** (-)	**** (-)	**** (-)
Adjusted R²	0.16	0.26	0.14	0.30	0.52
<i>N</i>	149	149	155	125	161

* p < 0.10

** p < 0.05

*** p < 0.01

**** p < 0.001

¹Inverse relationships indicated by (-)

Predictors of Multiple Forms of Activity. As a rough indicator of scope of activity, we calculated a count of number of forms of activity in which respondents were engaged. In the analysis reported below, we examined two sets of predictors of the number of forms of activity using ordered logistical regression. In the first model, we examined the effects of sociodemographic variables plus

religiosity, health, activity limitations, and automobile ownership. The model accounted for only 6% of the variance (Table 18). One variable (health) was significant at the 5% level. Two other variables (education and car ownership) were significant at the 10% level. In the second model, we added the general motivation and general barrier measures. The expanded model explained only one percent more of the variance. Only general activity motivation was significant at the .10% level. None of the sociodemographic characteristics, health, activity limitations, or car ownership was significant.

Table 18. Effects of Background Variables and General Motivation and Barriers on Activity Count (Ordered logistical regressions)		
Activity Count	Model 1	Model 2
Independent Variable		
Age		
Gender (Male)		
Education	*	
Marital status (Married)		
Religiosity		
Health	**	
Activity limitation		
Own car	*	
General Activity Motivation	--	*
General Activity Barriers	--	
Pseudo R²	0.06	0.07
N	159	152

- * p < 0.10
- ** p < 0.05
- *** p < 0.01
- **** p < 0.001

DISCUSSION

Development of Measures

Our effort to develop a set of scales to measure a set of activity motivations and barriers was successful. For each construct, we were able to develop an internally consistent measure. With the exception of educational motivation, we found evidence that each of the scales was unidimensional. In the case of educational motivation, we found through factor analysis that our item pool was more usefully divided into two subscales. Inspection of the items suggested that the measures be named instrumental education motivation and expressive education motivation. The distinction between these two types of motivation for older adult education is consistent with the literature (Lowy & O'Connor, 1986). For every scale we achieved a Cronbach's alpha value of at least .77. We were also able to develop relatively concise measures. Our measures range from nine items in length in the case of general activity motivation to four items in two cases: exercise motivation and expressive education motivation. Our full set of 11 scales consists of 62 items.

Survey Administration

We were more successful in recruiting subjects for conventional survey administration than we were for an Internet survey. We began by posting the survey on the Umass Boston Gerontology Institute web site and reached out to members of the University's learning in retirement program to complete the survey over the Internet. In addition, the Massachusetts AARP announced the Internet survey on its web site. In spite of these efforts, only 30 questionnaires were completed over the Internet. We suspect two reasons for the disappointing response: A general reluctance of older people to complete computer-based surveys. Also, we suspect that the length of the questionnaire discouraged potential respondents.

We enjoyed greater success with self-administered paper questionnaires that were distributed in settings in which elders congregate. Of the completed questionnaires, 162 were completed in a conventional paper format. Because we used other organizations to help us in distributing the questionnaires, we do not know what proportion of those took a questionnaire and what proportion of those who accepted a questionnaire returned a completed questionnaire.

In subsequent research in which we hope to examine the relationship between motivation and barriers to activities of older people, our experience indicates that we will have to rely on

conventional survey administration. We may be able to persuade some respondents to complete the survey on line. Further attempts to encourage respondents to complete the survey on line are attractive because of the potential to reduce the cost of survey administration greatly.

A number of survey administration issues come to mind.

Substantive Findings

For each of the sectors that we studied, we found that motives and barriers contributed to an understanding of behaviors. Consistently, regression models that included motivations and barriers explained a greater proportion of the variance than models that were limited to background characteristics of respondents. Consistently, the motivation and barrier measures suppressed effects of some of the background characteristics that were significant in models without the motivation and barrier measures. The relationship between age and employment is a good example. The findings of this study are consistent with other surveys of elders in showing an inverse relationship between age and employment. However, when work motivation and work barrier questions were included in a logistic regression predicting employment, age was not significantly related to employment. On the other hand, when we examined predictors of motivation to work, age was associated with motivation to work. This pattern of findings suggests the possibility that with increasing age, motivation for paid employment decreases, and reduced work motivation leads to retirement.

We found that motivation and barriers that were specific to activities had stronger explanatory power than measures of general activity motivation and general barriers to activity. In the case of volunteering, general activity motivation helped to explain volunteering beyond the effects of volunteer motivation. In no case did general barriers explain an activity independent of the effect of barriers specific to that activity.

Our general activity motivation measure was weakly associated with the count of number of activities, which served as a measure of overall activity. The general barrier measure was not associated with the count of number of forms of activity. A number of interpretations are possible. One possibility is that the general measures are less important than we expected. It is also possible that a count of forms of activity is inadequate as a measure of overall activity. A measure of the total amount of time spent on activities might be a better measure. A better measure might also include forms of activity that were not studied here. In our previous pilot study (Caro, Bruner-Canhoto, Burr, & Mutchler, 2005) we found that general activity motivation was associated with

number of volunteering sectors in which respondents were engaged. In this study, we did not measure diversity in volunteer work. A more adequate test of the explanatory power of the general activity motivation and barrier questions should include more sensitive measurers of diversity and overall scope of activities.

Our substantive findings need to be interpreted cautiously because our sample is not representative of any specific population of elders and our sample is limited in size. Our sample is biased toward elders who take classes and volunteer because many of our respondents were recruited through classes or volunteer assignments. Nevertheless, the findings are intriguing and suggestive of possible ways in which motivation and barriers affect activities of older people.

A limitation of cross sectional research is its inability to address the direction of causality in relationships between motivation and behavior. Our hypothesis is that motivation and perceived barriers influence behavior. An alternate possibility is that behavior explains motivation and reported barriers. In other words, responses to motivation questions may be a rationale developed to explain activity. Engagement in the activity may precede the rationale. The rationale or motivation may reinforce the activity, but the activity may not entirely be a product of the motivation. Similarly, reported barriers may be a justification or explanation for not engaging in an activity. The reported barriers may be incidental to the actual reasons for nonparticipation.

These questions about direction of causation can be addressed more adequately in longitudinal research. We hypothesize that among those who are not currently engaged in an activity, those who are more highly motivated to engage in that activity are more likely to engage in that activity at a later time than those who initially are less motivated. Similarly, among those who are engaged in an activity at an initial measurement, those who report greater barriers are more likely to cease that activity than those who report fewer barriers.

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